Open Educational Resources for Higher Education: a global revolution?

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The Open Educational Resources movement is a global movement led by educationalists and others interested in the spread of learning designed to utilise technological developments to enable free access to educational content to everyone. The term has gained currency since it was adopted in 2002 at a UNESCO Forum on the Impact of Open Courseware for Higher Education in Developing Countries. The Forum defined OER as

"The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (UNESCO 2002).

The Forum was convened as a response to the decision by the Massachusetts Institute of Technology (MIT) to place all of its learning materials freely available online on a site called 'Opencourseware'. This decision may come to be regarded as one of the most significant developments ever taken in Higher Education as it has proved the catalyst for forces which may well transform not just Higher Education but also our whole attitude and approach to learning. It has the potential to completely alter access to higher education and with it the ability of developing nations to create high value human capital in a way unimaginable thirty years ago.

What l intend to do is mostly practical and only a little bit analytical. The plan is to simply describe some of what is out there both to give you an idea about the nature of the beast as well as alert you to the possibilities these resources have for you own delivery. This involves a brief summary of the most important and useful web based resources.

In a short presentation like this l am not attempting to be comprehensive. I am not discussing Wikieducator, open publishing sources or the myriad of other resources which are appearing.

The Opencourseware Consortium and Opencourseware

This is the umbrella organisation for HE institutions and other organisations with an interest in OER and attempts to bring together all their collective resources. For anyone wanting to find out more about OER this is a useful starting point

http://www.ocwconsortium.org/

The organisation gives you a good idea about who is participating in this movement globally. One of the notable features in this respect is the low level of participation in many European countries including the UK. Sweden, Norway and Germany have no participating universities; the UK two (the OU and Nottingham)- compared with 25 in the US and 39 in Spain.

As well listing participating organisations the website also hosts content. In OER content is organised in ‘courses’ – a suitably vague term which mostly describes what we might recognise as a module but is often less than that. The search facility on the Opencourseware Consortium site will not enable you to view all programmes but using a generic search term ‘business’ (in English) yields about 70-80 relevant modules, ‘biology’ perhaps 50-60, ‘medicine’ 40-50, ‘literature’ about 50. As a tutor you may wish to use the resources to develop your own module(s). This might be as an additional resource for students or it might give you some ideas about curriculum design and content. It might also be that exposure to another view might make for an interesting alternative cultural perspective from your own. For example an American perspective on English literature might make for a more intriguing learning experience.

There is quite a long list of contributing universities and organisations but it is noticeable that much of the content is dominated by MIT contributions. For example the term ‘archaeology’ yields six hits, four of which are from MIT. The other limitation is one of relevance- many identified courses do not really match the search term. And since MIT doesn’t run Archaeology degrees there is not much content. By contrast a search term which includes the word ‘Engineering’ will yield plenty of quality hits because that is what they do at MIT.

So a second point of call if you are looking for free material you may as well go to MIT’s **Opencourseware** to see what is on the menu.

http://ocw.mit.edu/index.htm

The left hand column sets out their programmes, which as you might imagine is strong in the sort of technical subjects we do not do at Chester- but there is the Sloane School of Management and I have selected ‘Literature’ where there is a lengthy list of materials on fiction, poetry, drama and contemporary popular cultural forms.

If we click on ‘Twentieth century fiction’ there are some very useful online resources for authors such as Joyce, Conrad, Kipling, Nabokov etc. In

addition there are filmed lectures as you might hope and some of the modules are not even as well stocked as this. Still it does have its uses.

There is anecdotal evidence that some University programmes globally are using Opencourseware as the basis or even the entire syllabus. It is not difficult to see the logic of this: if it is good enough for one of the world's leading universities why reinvent the wheel? Moreover if your own institution lacks learning resources why not simply use MIT's?

At the very least in many subject areas Opencourseware provides a kind of benchmark. As someone involved in developing distance learning materials since 2004 l have always been mindful of the standards the Open University has set and this has helped me to produce materials to the highest standard l can.

MITx and Edx

Opencourseware is very much first generation technology (ie largely text) and is not really designed as a web product. It is simply the electronic artefacts which accompany conventional delivery with no attempt at assessment.

MITx http://mitx.mit.edu/ is next generation, specifically designed for the web. But it also includes assessment and enables anyone to obtain a certificate from MIT recording their achievement. At the time of writing only one programme is available, in Circuits and Electronics.

MITx is about to be superseded by **edX** https://www.edx.org/ - a joint collaboration between MIT, Harvard and Berkeley. The programmes on Edx are like MITx specifically designed for the web and facilitate assessment so that certificates can be awarded. There are currently seven programmes which will commence from this Autumn. They are all in technical areas (Introduction to solid state chemistry, Introduction to computer science, Quantitative methods in clinical and public health research etc) enabling automated assessment.

Alternatives to Opencourseware / edX: Coursera

Coursera https://www.coursera.org/ is funded jointly by US philanthropists and sixteen mostly American Universities (well known contributors include Princeton, Stanford, John Hopkins and Duke) with three others: Toronto, Federal polytechnic of Lausanne and Edinburgh. The content is provided by the participating universities. Unlike Opencourseware and edX which are very text oriented, the content of

Coursera is multi-media and is designed to be used interactively. As with Opencourseware the content is available to contributing University's own students as well as others but there is no blanket giving away of materials. Instead there are 116 programmes which can be broadly described as short courses. There is therefore greater choice than EdX reflecting the larger number of participating universities.

Coursera also boasts a pedagogical method, claiming that its encouragement of active learning is more effective than the traditional classroom based approach.

As might be expected the list of courses has a rather computer science and mathematics feel to it but there are programmes some at Chester may find useful – such as 'Introduction to sustainability', 'Nutrition for health promotion and disease prevention', 'Introductory human physiology', 'Introduction to sociology' several Maths and computing programmes and so on. Let us take the example of 'Introduction to sociology'. The first point to note is that participants engage at the same time as students enrolled on the programme at Princeton. They see the lectures which are delivered electronically are followed up by online assessments and tutorials involving students from the University. Reading material for the tutorial is freely available. You can be assessed but will not receive credit for it.

Non University providers of OER

The problem with University generated free content is of course that there has to be something in it for them. What is interesting about the movement to provide free content is that those who are prepared to give it away are fairly confident that there will still be students who will come to them for the 'real experience', even if they are also prepared to issue a certificate of attainment. Giving content and certificates away from their perspective does not damage their interests but enhances the brand- it advertises their wares, reinforces their reputation for quality and demonstrates their broader commitment to social equality.

Non university providers have no entrenched interests to protect. OER has spawned new providers often as a result of the activities of philanthropists whose motives are more radical than those of universities. **Peer2Peer** https://p2pu.org/en/ is the brainchild of South African entrepreneur Philip Schmidt which works on the Wikipedia/ wisdom of crowds principle- that is a belief in the ability of self organising groups of people to create meaningful learning without the need for the formal mechanisms of

professional tutors, institutional quality assurance and so on. The subjects people choose to study do not reflect traditional subject disciplines but more the desire of the learners to learn something- such as Writing for the Web and Entrepreneurial Marketing. I think there is something very interesting in the idea of Peer2Peer but it is clearly very early days. What is noticeable is the lack of content on their website and given the global remit, the very low number of participants.

The **Saylor Foundation** http://www.saylor.org/ is an altogether different proposition. Learning is not organised by learners but is structured in a traditional way around subject disciplines. The founder and funder of the foundation Michael Saylor is dedicated to removing all barriers to accessing high quality education so that it is freely available to anyone. Areas of study include those you would expect to see at any University- Mechanical Engineering, Psychology, Mathematics, English Literature and so on. Within each area of study are a series of programmes at introductory and advanced levels, with options. They are arranged very much as you might expect to see a suite of modules for a degree programme. What is interesting about them is that the materials are prepared to the very highest standards by reputable academics and peer reviewed. Instead of the very text based materials provided on Opencourseware, learning materials are multi-media including videos (many supplied by the Khan Academy http://www.khanacademy.org/- 3000 freely available educational videos for free)

The site has over 240 high quality programmes (modules) which can be freely accessed by anyone. Programmes relevant to subjects covered at Chester include Art history, Biology, Politics, Psychology, English, History, Maths and Business Administration. The materials are developed by renowned scholars and peer reviewed

Let us take the example of Mathematics. I am no mathematician but the menu of programmes (not all of which has been constructed) looks like a complete degree programme to me with Foundation, Core, Advanced and Option modules. Within each there are lectures, readings, assignments, web resources and so on. While it is hard to imagine anyone questioning the quality of the materials it is difficult to map the materials against the European Credit Transfer System and associated nominal learning time, let alone learning levels. This is not just a parochial perspective: ECTS is the first trans-national attempt to quantify learning achievement.

Looking through the lists for other subject areas, the same comments apply. The English Lit schedule looks reassuringly conservative- with plenty of Dante, Shakespeare etc and no post-colonial, feminist magic

realism to frighten the horses. The content of each programme is a very useful resource in its own right and the assessment, while reflecting US rather than UK practices appears robust. At one level Saylor is a goldmine for tutors and students but at another it poses some very interesting questions. We will return to this.

Other providers

Udacity http://www.udacity.com/ is another privately funded, freely available online, provider of courses. The number of courses (they are called 'classes') is limited (eleven) and are all in technical subjects. These include 'Building a search engine', 'Design of computer programs' and so on. Delivery is via videoed lectures with an emphasis on learning by doing. Assessment is fully automated and certificates issued.

Straighterline http://www.straighterline.com/ is not strictly OER as it is profit making rather than philanthropic but its courses are low cost and it represents another important strand in the evolving development of what is also known as **MOOC**'s (Massive Open Online Courses)- the involvement of academic publisher. McGraw-Hill deliver content via Blackboard; the company is not accredited but are endorsed by the relevant US accrediting body. Costs are either $99 a month or approximately $3000 for the equivalent of a degree.

OER in the UK

As previously noted the OER movement has not really developed significantly in the UK. UK universities are not as well endowed by philanthropists as their US counterparts and there have been no private individuals in the UK with the money and interest to establish something like the Saylor Foundation. The main impetus for OER has come from the Open University and a variety of smaller niche offerings developed via a HEFCE funded joint HEA/ JISC project.

The main platform for the OU's OER is Learning Space http://openlearn.open.ac.uk/ which hosts over 600 learning programmes (that word again) on all manner of subjects. As you would expect from the OU the content is extremely good although from my scanning the materials are very text based. There is also some indication of level. The limitations are that much of the content is not as detailed as it should be

for HE level study, there is no summative assessment and there are wide variations in notional learning time although all are shorter than might be expected for a conventional module. The programmes are therefore best regarded as introductory or snippets but the range is impressive.

Of special interest is the series of programmes on Study Skills as these can be used to provide underpinning learning support for students on any programme.

The use of OER in UK Universities

The main motivation for this presentation is to highlight resources which are freely available to assist with delivery. In this section l want to briefly discuss the use of OER in UK. The first observation to make is that there is not too much to report

The only real evidence l have unearthed (beyond the OU) is a set of case studies conducted as part of the JISC/ HEA project. These include the use of OER in Sociology programmes 2010-11 (Gruszczynska 2012 (a); Gruszcynska 2012 (b)) where it would seem there were difficulties incorporating OER into a conventional academic programme from a student perspective and that the use of interactive technologies to develop OER proved very time consuming for academic staff. Liggett et al (2012) set about adapting OER resources for their own programmes (‘repurposing’) using Research Ethics as a subject. This appears to have been more successful. Hockings (2012) used OER to improve student engagement at the University of Wolverhampton. As with Gruszczynska this involved the production of new resources rather than repurposing. Although the materials appear to have been well received by students, their production would appear to be very time consuming. Other case studies, such as Altomonte et al (2012), Atkinson (2012), Candy and Blake-Ewing (2012), Johnson and Hammond (2012), Rolfe and Fowler (2012), Talbot (2012) and Thomas (2012) all take a similar approach-generating original materials rather than using those already

freely available.

OER at Chester

I would be interested to hear of any uses of OER in the University. The materials produced by the OU and elsewhere have all received special funding and l do not think anyone here has had any external backing.

Within the WBIS team there is interest in using open content in five respects. I should make clear all of our students work at distance, part time on a negotiated award programme. Although we provide workplace workshops and individual tutorials a major issue for us is ensuring students have access to appropriate underpinning knowledge.

We are therefore interested in using freely available content for learning purposes. Up until quite recently we generated original content to provide underpinning learning for our students- in the form of Theory documents and supporting book extracts and journal articles. This is extremely time consuming- both in terms of initial production and updating. It also requires tutors to have highly developed skills as web authors without enabling them to obtain wider credit for academic authorship. A further limitation is the academic underpinning knowledge we are able to draw upon. WBIS is a trans-disciplinary programme with a corresponding multi-disciplinary set of academic tutors. But there are some gaps. None of us are experts in finance in the private sector for example so we have not been able to prepare materials for a module in that field. The Saylor Foundation has a very good programme in the area which might solve our problem.

Prior to the advent of OER we had already largely abandoned writing Theory documents in favour of an approach which uses more published sources linked together with text. But even this is demanding, as we have to ensure the materials are appropriate and the text relevant. We are aware that such an approach is completely text oriented. Creating multi-media learning materials has been an ambition for some time without having the time to do it. OER appears to be doing it for us

In addition to providing underpinning knowledge in our existing offering OER enables us to expand our portfolio. This can be to better support existing students (using the Study Skills materials from the OU's Learning Space for example) but it also enables us to offer our students a far wider variety of what we call 'taught' modules (ie non project modules with subject content) and enable our students to draw upon a far wider variety of learning resources than hitherto.

We are also considering offering free content ourselves, where we have it. An increasing source of new business for us is via online sources, including Linkedin. We have had initial conversations about doing the sort of things other universities do- giving away a little in the hope of attracting business for the stuff which pays- assessment and accreditation.

Which brings me to the final reason for our interest- the opportunity OER presents for accreditation. This is by far the most radical potential use.

University regulations are about to change so that a named award can be obtained where up to two thirds of the credit is obtained experientially. I can see no reason why we would not accept completion of an edX , Straighterline or Saylor programme as the basis for an APEL claim. For those of you unfamiliar with the cost of modules 20 credits of APEL costs £220 compared with £850 for a conventional WBIS module. That works out at £2640 for two thirds of a degree which you can complete at home, working at your own pace.

Concluding comments

As is apparent from the foregoing OER provides a great opportunity for repurposing- adapting materials for our delivery and awards. I have highlighted potential uses in the WBIS programme but others engaged in distance delivery, or even face to face, may find uses.

Beyond that there is the possibility of enormous change in HE as credible online programmes are now cheaply or freely available to millions. There are no figures as to how many people are accessing such programmes but figures for over 100,000 have been quoted for single classes (The Times 2012). The other interesting feature is the use of automated assessment. While this is feasible in technical and scientific subjects the scope is less in the humanities and social sciences.

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